physically mixing a positive active material with an additive, the positive active material being selected from the group consisting of lithiated transition metals, and the additive being selected from the group consisting of semi-metals, metals, and oxides thereof;

adding an organic solvent, a binder, and a conductive agent to the mixture to prepare a positive active material slurry composition;

coating the positive active material composition on a current collector; and

drying the current collector coated with the positive active material slurry composition.

REMARKS

Claims 1-7 are pending and were examined. Claims 1-7 were rejected. The Applicants amend claims 1 and 5.

35 U.S.C. §102 (Claims 1-4)

The Patent Office rejects claims 1-4 under 35 U.S.C. §102(a) as being anticipated by Ikawa, et al. (U.S. Patent No. 5,922,491) ("Ikawa").

The Applicants respectfully assert that Ikawa does not anticipate the Applicants' claims 1-4, as amended. Ikawa teaches a positive active material. This is to be distinguished from the Applicants' claim 1 reciting a positive active material composition. The positive active material composition is prepared by physically mixing the positive active material, a conductive agent and a binder in a solvent in a form of slurry. As disclosed, a positive active material composition generally differs from a positive active material in rechargeable lithium batteries.

In the present invention, semi-metals, metals (such as Si, B, Ti, Ga, Ge, Al, Ca, Mg, Sr, Ba or a mixture thereof) or oxides as additives are added to the positive active material composition. Therefore, the positive active material composition of the present invention is prepared by physically mixing a positive active material, the additive, a conductive agent, and a binder in a solvent.

This is to be distinguished from Ikawa that teaches an additive such as Al Sn, Mn, B, K, or Na to prepare the positive active material (col. 25, lines 60-65 and col. 26, lines 5-30). In the Ikawa process, oxide or sulfide is mixed with these additives and the resulting mixture is then heat-treated. The heat-treated material is ground, and the resulting material is treated with nitric acid. The obtained positive active material is then used to prepare a positive active material composition.

In the present invention, the additive is physically mixed with the positive active material, not doped into the positive active material during the heat-treatment as taught in Ikawa.

For the foregoing reasons, the Applicants respectfully request withdrawal of the rejection of claim 1. Because claims 2-4 depend from claim 1 and contain all of its limitations, the Applicants also request withdrawal of the rejection of claims 2-4.

35 U.S.C. §102(a) (Claims 1 and 3)

The Patent Office rejects claims 1 and 3 under 35 U.S.C. §102(b) as being anticipated by Miyasaka (U.S. Patent No. 5,869,208) ("Miyasaka"). The Applicants respectfully contend that Miyasaka discloses $Li_xMnO_{2-z}A_z$ and $Li_zMn_{2-y}M'A_4$, but does not disclose the additive. The Applicants respectfully request withdrawal of the rejection of claim 1 based on this fact. Claim 3 depends from claim 1 and contains all the limitations of that claim. The Applicants therefore also request withdrawal of the rejection of claim 3.

35 U.S.C. §103(a) (Claims 5-7)

The Patent Office rejects claims 5-7 under 35 U.S.C. §103(a) as being unpatentable over Ikawa as applied to claim 1. The Patent Office states that the reference is silent as to adding an organic solvent to the mixture; but, that "Official Notice is taken that it is well known in the art to add electrolyte solvents (organic solvents) to electrodes to increase conductivity." (Office Action at page 4)

The Applicants respectfully contend that the solvent in the positive active material composition differs from a solvent in electrolyte. The solvent in the positive active material composition does not remain in a positive electrode, because the positive electrode is obtained by coating the positive active material on a current collector and drying it. During the drying step, the solvent in the composition is evaporated from the composition and removed. The resulting positive electrode includes the positive active material, the binder, and the conductive agent. The Applicants respectfully request withdrawal of the rejection of claim 1 based on this fact. Claims 6-7 depend from claim 5 and therefore contain all of the limitations of claim 5. The Applicants therefore request withdrawal of the rejection of claims 6-7.

CONCLUSION

In view of the foregoing, it is submitted that claims 1-7 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, she is encouraged to contact the undersigned at (310) 207-3800.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

Dated: January 9, 2002

By: _____
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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on January 9, 2002.

_____
Margaux Rodriguez *January 9, 2002*

VERSION WITH MARKINGS TO SHOW CHANGES MADE

The claims have been amended as follows:

1. (Amended) A positive active material slurry composition comprising:

a physical mixture of

a positive active material [including] comprising a lithiated transition metal compound[; and an], and an additive selected from the group consisting of semi-metals, metals and oxides thereof[.];

a binder; and

an organic solvent.

5. (Amended) A method of preparing a positive electrode for a rechargeable lithium battery comprising the steps of:

physically mixing a positive active material with an additive, the positive active material being selected from the group consisting of lithiated transition [metal] metals, [compounds,] and the additive being selected from the group consisting of semi-metals, metals, and oxides thereof;

adding an organic solvent, a binder, and a conductive agent to the mixture to prepare a positive active material slurry composition;

[applying a]coating the positive active material composition on a current collector; and

drying the current collector coated with the positive active material slurry composition.